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ABSTRACT

This paper discussing vocational education begins with a brief historical overview highlighting the need for close links between vocational training and employment. The history of vocational training is described in traditional societies, industrial companies, the period following World War II, and the recent economic and cultural crisis of unemployment. The paper proposes a typology of the vocational training systems handed down from the past. In this period of growing complexity and specialization of vocational training, different systems of vocational training coexist not only in different countries, but even within the same country to satisfy different needs. The period of vocational training, when it can be specifically identified, comes somewhere between general education and employment. Three criteria for classification are discussed: (1) proximity of training and employment situations; (2) role of general education; and (3) responsibility for training. The paper discusses five major trends observable in the world today: (1) during the period of economic growth and the crisis which followed, the base of society changed from energy to information and communication; (2) technical developments, together with developments in science and the progress of ideas have impacted on the organization of work and employment; (3) these changes affect every country, and require new employee aptitudes; (4) these changes created a growing need for education and training; and (5) the world is witnessing an ambiguous process of change. From these trends, the paper envisions issues arising in an uncertain world. The paper concludes with some tentative forecasts. (DK)

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International Commission on Education for the Twenty-first Century

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VOCATIONAL TRAINING YESTERDAY, TODAY AND TOMORROW

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International Commission on Education for the Twenty-first Century

Vocational training yesterday, today and tomorrow

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Every trade or profession requires know-how, skills and knowledge accumulated over a period of time by a human community. Their acquisition, however it may take place, is part of the training process and contributes to the creation of a personal identity and social recognition.

The term **technological and vocational education and training** is often used. The idea is to make a distinction between **education** which is imparted in the early years, or perhaps even only during the period of compulsory schooling, and **training** which follows later. These two aspects may also be quite simply the responsibility of different ministries. We shall not make this distinction but will use the term **training** to cover both aspects, i.e. **initial training** before taking up a job and **continuing training** thereafter. What is more, the two increasingly tend to be separated by a "gap" for induction into working life. We shall also use the term **general education**, which does not refer to a trade or even just to the role of the human being as a worker, in opposition to - or in association with - **vocational training**. As to the distinction between technological and vocational training, this is often a matter of level: the training given to skilled workers is referred to as **vocational** and courses on a higher level, in particular for technical specialists, designated **technological**.[1] We shall not be making that distinction either, since, in our view, training courses are always vocational and the difference of level is not clear-cut in the present employment situation. We prefer to use the term **technological** to denote academic training organized around technological disciplines such as mechanical engineering or electricity, and not directed towards a specific trade, such as that of a lathe worker or electrical fitter (see Sec. 4.5).

After a rapid historical overview, which will highlight the necessity for close links between vocational training and employment, we shall go on to propose a typology of the vocational training systems handed down to us from the past; we shall then look at the main trends observable in the world today. That in turn will enable us to envisage the issues which are arising in an uncertain world and to conclude with a few tentative forecasts.

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[1] Another difference is linguistic and also involves social concepts: the French term **formation professionnelle** is translated into English as **vocational training** or even **craft training**, while the English word **professional** tends to denote the professions or engineering.

1. Historical overview

1.1 In traditional societies in which knowledge is fairly static and social evolution slow, training takes place informally, "on the job", by practising a trade, often from childhood and within the family. This applies, in particular, to farming and shopkeeping.

In the craft trades, the notion of the master and journeyman emerges more clearly. The apprentice acquires his trade by watching the master at work (or "stealing the trade", as has sometimes been said). He takes an active part in the work and is given advice as he does so. The link between the two may be formalized by a contract setting out their respective obligations, sometimes including payment by the family of the apprentice for the training received by him.

1.2 The appearance of industrial companies from the mid-nineteenth century onwards in Europe and North America introduced a completely new form of employment organization. To enable a large number of persons, drawn mostly from the rural environment, to be set to work rapidly, a rigid, hierarchical and mechanized organization made its appearance, passing on little information and needing little training. A parallel may be drawn in passing with the dominant science of the industrial revolution, i.e. physics, which explains the world in mechanistic terms and views matter as hierarchical and undifferentiated.

The era of mass production, with standardized forms of production and consumption, was made possible by the "scientific" organization of work, i.e. Taylorism or Fordism. Its effective implementation required only minimum general education on the part of the workforce - reading, writing and arithmetic. The School had the task of providing this basic education while the very limited vocational training which was needed could soon be acquired on the job.

Supervisory staff were few and split into two groups. On the one hand were the foremen, who came from the ranks of the workers and were set apart by their experience, authority and close integration into the system. On the other hand were the engineers, whose social or ethnic origin was different. They had received a higher education, admittedly technical but nevertheless conferring a different type of authority on them through distinctive cultural features.

At the same time, an essentially administrative and commercial tertiary sector gradually developed, with non-symmetrical exchanges between different parts of the world: a flow of raw materials in one direction and of manufactured products in the other. Organization here was less rigid, while still being influenced by the division of labour and Taylorism. The necessary training was also of a general nature but slightly higher than in the case of manual workers, so justifying a difference in hierarchy between "white collar" and "blue collar" workers. The techniques were fairly rudimentary and distinct from each other, consisting of shorthand and typing and accountancy. However, they justified the organization of specialized courses to teach them.

The professions round off this portrait of society in the nineteenth and early twentieth centuries. Their organization resembled that of the craft trades, but the education of their members was completely different, being of university level.

Society was in fact split between a small and largely hereditary elite (company directors, engineers, and members of the professions) and a mass of small farmers, manual workers, office workers and shopkeepers. The education system reflected this dichotomy, with two types of education whose boundaries were hard to cross - primary schools for the masses

with a few extended courses to train office workers and civil servants, and secondary education for the elite.

1.3 The period which followed the second world war led to a very different situation. The needs of reconstruction, urban development, political change, especially decolonization and the desire of all countries for development, the increasingly global nature of problems and of people's awareness, technological evolution towards computer systems, and electronic or physical communications resulted in an unprecedented growth of world production and trade.

From the point of view of social organizations, the first consequence was an increase in the size and complexity of companies, made possible by the easier and more economical transmission of information. Employment became diversified and new kinds of employment made their appearance, half way between executive staff and shop floor workers - technical specialists, higher technical specialists, sales technicians and so on. At the same time, the role of the State became more pronounced with an increasingly complex civil service. In the Western countries, a new compromise was struck between liberalism and State control.

The demand for labour thus not only increased but became more varied, too. Companies wanted to have at their disposal a reserve of trained labour which would permit growth and flexibility, whereas the relationship between training and employment was becoming more complex and forecasting more difficult.

Economic growth and job diversification came to permit an unprecedented degree of social mobility. The development of information made this mobility desirable to people and they now sought to plan their careers more carefully. One's job became more than ever before a component of personal identity. The employment of women grew, but their jobs were less varied than those of men and were concentrated essentially in the tertiary sector.

The notion of productivity spread. The economic theory of human capital and its derivatives[1] resulted in a growing awareness of the fact that vocational training is not just a private matter, that it holds the key to the future of our countries, and that the public authorities cannot afford to disregard it.

All these factors resulted in a demand for education, rising numbers of pupils and students, and greater variety in the education systems[2]. Vocational training acquired an institutional basis and diversified. It acquired the status of a specific activity, either as a new function identified as such in companies or as something provided outside by specialist bodies. In addition, it was no longer confined to the period immediately following recruitment since the rapid development of products, manufacturing techniques and skills provided an incentive for training to become permanent, lasting all through a person's working life. The problem of how people could find their way in this educational and vocational world, with a rapidly growing range of opportunities, also became increasingly acute.

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[1] See report by Danièle BLONDEL to the Second Session of the International Commission on Education for the Twenty-first Century (September 1993): Development and education - the present state of economic analysis.

[2] See UNESCO report: Reflections on the future development of education. Paris (1985). In particular, a remarkable effort has been made in several countries of South East Asia: see the reports by UNESCO's Regional Office for Asia and the Pacific. Bangkok (1984).

1.4 **With the economic and cultural crisis** which followed the period of growth in most countries, unemployment became the main problem. This is something which now affects the industrialized countries and is also becoming more serious in the developing world.

The organization of business and the civil service and the role of States are being rethought because people are beginning to realize that increasing complexity is playing its part in the crisis and that employment is created mainly by small companies. Once again, progress in the transmission of information is playing a decisive role. There is in fact no longer any reason to accord pride of place to a hierarchical organization as the most economical method for the transmission of information, given its lack of flexibility in other respects. It is becoming possible to go over to forms of organization that are more adaptive because they involve closer personal participation and in which the objectives are set at a higher level and the lower level is left to decide how best to attain them, subject to evaluation. This trend is making business organization still more remote from the Taylorian model.

The effect that unemployment is having on education and training is simply to accentuate their development, to make the public more immediately aware of it and make it more irreversible. Wherever sufficient resources exist and demographic circumstances permit, there is a tendency for education and training to expand and even to experience explosive growth. They are perceived by some economic agents as a magic solution, by individuals as an insurance policy against unemployment and by the public authorities as a means of further delaying the arrival of young people on a difficult employment market. Women are worse affected by unemployment than men and the education of girls is developing still more quickly than that of boys. What is more, the problem of the employment of unskilled young people who left the education system prematurely is becoming particularly acute.

2. The coexistence of different systems of vocational training

The historical development outlined above brings to light the growing complexity and specialization of vocational training. This development has left us with several different systems of training which coexist not only in different countries but even within the same country to satisfy different needs. Because of the variety of these systems, it is no easy matter to categorize them.

The period of vocational training, when it can be specifically identified, comes somewhere between general education and employment. The system of vocational training is intermediate between the education system and the production system. Three criteria for classification therefore spring to mind:

2.1 The proximity of the training and employment situations

These situations coincide when young people take up employment accompanied by "on the job" training after a longer or shorter spell of general education, or perhaps none at all; this is the oldest system of all and no doubt still the most widespread. It is said to be **informal**. It covers both traditional farming, which requires no general education, and craft and commercial apprenticeship in many countries, to say nothing of the modern Japanese corporations which recruit their employees for life after secondary or higher education.

In other instances, vocational training is **formal** in the sense that a distinction can be made between the period and status of training and employment. However, the distinction may or may not be clear-cut and participation in the productive process during the training period also varies - from apprenticeship under contract to training in schools possibly accompanied by work experience in a company.

2.2 The role of general education

General education and vocational training may be consecutive or partly simultaneous.

In the first instance which is, in particular, that of the informal systems, general education does not continue during vocational training.

In the second instance, time is set aside for general education in association with vocational training. The vocational training may range from a few hours each week in the German dual system to the American system where a vocational module is added to a course of general education which takes up most of the student's time. The commonest trend nowadays is for growing importance to be attached to general education.

2.3 Responsibility for training

This may reside primarily with the company or else with the education system:

- The responsibility of the company may be total, as in the case of informal systems.

- It may be shared with outside bodies as in the case of the dual system known in the Germanic countries. The roots of this system can be traced back to the old craft apprenticeships, but it also grew out of an early realization by industry of the importance of training for the workforce. The responsibility of the company takes precedence under this system.

- Companies may join forces to shoulder this responsibility, especially when they are too small to have their own training department. In that case they may delegate some responsibility for training to an inter-company centre.

- Training may be entrusted entirely to autonomous centres. This arrangement is particularly widespread in Latin America, one example being the National Department for Industrial Apprenticeship in Brazil, whose training centres are managed on a tripartite basis by the government, employers and employees.

- It may also be entrusted to private or public vocational schools. There is no clear dividing line between training centres and vocational schools, but the schools have closer ties with the education system, which promotes links between general education and vocational training. This is the commonest type of system in continental Europe and it has spread to many other countries throughout the world.

- Vocational training may be organized in the same schools as general education, either in special streams or as modules which form part of a more general secondary education course. This is the situation found in the English-speaking countries and it is possible to see technical options tied in with general courses being introduced as a preliminary to informal vocational training so as to take account of the importance of general education for today's trades.

As was pointed out earlier, several different systems will be found in one and the same country. This makes for greater flexibility and young people can pass successively through more than one of them. What is more, since the 1960s, the idea of continuing training has taken root. This is being made increasingly necessary by the demand for an adaptable workforce. It is largely the responsibility of companies, but the companies often negotiate such training with specialist outside bodies or with schools.

While several systems coexist in many countries, the fact remains that as a general rule each of them has one system which takes precedence over the others, e.g. full-time vocational training in Germany and Japan or apprenticeships in France. The other, less prominent, systems meet specific needs and may help to remedy the shortcomings of the dominant system.

In particular, the problem of the failure of too many pupils in compulsory education and their early elimination from the education system leads to an expectation that vocational training will make good this failure so as to alleviate unemployment. In the 1980s, many countries set up specific schemes, with the participation of companies, to satisfy this urgent need. One example is the British Youth Training Scheme which was grafted onto a system that was essentially informal following the very considerable decline of apprenticeships.

3. The major trends

3.1 During the period of economic growth and then during the crisis which has followed, we have gone from a society based on energy to a society of information and communication.[1]

At the time of the industrial revolution, the dominant sciences were physics and, as an offshoot of technology, mechanics. These are the sciences of the material world. During the period of growth, however, biology developed and, as an offshoot of computer technology, informatics. Unlike physics, biology places the emphasis on variety, the environment and uncertainty and hence on adaptation. Informatics is not so much the science of the computer as the science of information. It deals less with equipment, like mechanics, and more with reasoning, like mathematics, but in this case the reason is embodied in "programs". To give a name to this expression of immateriality, it was even necessary to invent a new word - "software" as opposed to "hardware". What is more, informatics leads to the construction of "models" of reality - intellectual models rather similar to those of Plato. The realities of which models are built include human organizations and even the human being himself, so that the term "artificial intelligence" is now used.

To a greater extent that their predecessors, modern techniques reach out into daily life and have become a factor for the unification of the world, even if this trend seems likely to impoverish our culture by reducing everything to a common denominator.

3.2 Technical developments, together with developments in science and the progress of ideas have had a considerable impact on the organization of work and on employment:

- automation, leading to a new division of labour between the worker and the machine and a reduction of the manpower needed to achieve a given level of production, with the reduction, or total elimination, of repetitive routine tasks, first in industry, then in the tertiary sector and even to some extent in agriculture;

- a change in the role of people: in earlier days people had to apply rules, for example on a production line or to keep accounts. Today they are being increasingly asked to

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[1] This does not imply that the problems of energy have ceased to be important; however, they are themselves dealt with by resorting to the techniques of information and communication, whether the aim is to save energy or take financial, diplomatic or even military action.

respond to the unforeseen at a control console in a securities analysis or even when an agricultural market suffers a setback;

- development of the tertiary sector, in the sense of action taken to influence people and human groups, now that automation leaves time enough for this purpose;

- a change in the international division of labour and the increasingly international nature of the economy, made possible by the rapidity of electronic and physical communications. The location of economic activities is no longer tied to the proximity of raw materials and energy but to a much greater extent to the availability, cost and training of the workforce;

- importance of innovation and flexibility so as to face competition in every sector, including agriculture;

- to achieve these goals, business organization is being changed to introduce a smaller hierarchical pyramid, decentralized decision-making and greater responsibility at the implementation levels.

3.3 These profound changes are now beginning to affect every country, although their impact is being felt gradually, and they inevitably call for new aptitudes on the part of employees:

- a critical mind and sense of responsibility at every level;
- independence in space and time;
- ability to use knowledge in order to solve problems;
- transition from the concrete to the abstract and vice versa;
- symbolization and use of different types of language;
- reasoning;
- ability to communicate and work in a team;
- creativity...

Today, everyone is expected to possess these skills which used to be the privilege of senior management. Above all, the key word is **adaptability** in reacting to unforeseen events in daily work or in the ability to cope with technical and organizational change.

3.4 All these economic, social and cultural changes created a growing need for education and training, first in the era of economic growth and then during the crisis which followed. A consensus grew up between companies, the public authorities, families and educators to invest in education and raise the standard of training. Convergence was indeed achieved on this point between economic demand, social ambitions and the ideology of an education seeking to liberate the individual.

Today, however, it would seem that this consensus is unable to cope with the continuing crisis and rising unemployment. The fact of the matter is that the notion of raising the standard of training is too vague to satisfy the demands of the economy, so that we find here and there an unsatisfied demand for labour co-existing with high unemployment; social mobility is insufficient to satisfy the growing number of graduates, especially as it is hampered by the crisis; the exclusion of the unskilled becomes more serious when their number diminishes. Finally, we are coming to realize that the consensus was based on a misunderstanding, since the demand from the economy is indeed for a higher standard of education and training, but only for those whom it can and wishes to employ. However, their number is tending to fall and their prospects of social mobility are not so good as they once were.

The misunderstanding is particularly apparent in the case of young people who fail in their general training. Many of them come from deprived backgrounds and, unless we take great care, the expansion of education may even tend to widen the gulf between the rich and the poor who cannot manage to benefit from it to the same extent. Social demand, taken up by the public authorities, consists in asking vocational training to make good failure and provide a second chance. In some countries, this is being extended to persons whose educational success is only average and for whom secondary or higher studies seem inappropriate. Even if this attitude is justified in social terms, however, it nevertheless helps to devalue vocational training and does not reflect the expectations of the economy.

3.5 In conclusion, we are witnessing an ambiguous process of change. It is making work less strenuous and requires greater personal initiative and responsibility; the "human resource" is regarded as more precious than before. At the same time, however, it is casting doubt on the role of work, which is coming to play a very minor role in human life - perhaps representing less than 5% of time on average, and badly distributed at that.

These developments can be summed up by saying that we have gone from a stable world which did not make many demands on training in the formal sense of the term to growth, interaction and complexity, and then to a world in which uncertainty reigns supreme.

4. Training for an uncertain future

4.1 Action in an uncertain world is a particularly delicate matter when it comes to training, especially vocational training with its precise objectives.

Training is in fact slow to define and implement; the time taken may be as much as ten years. What is more, it prepares people for a career which will stretch over several decades.

Training must therefore make it possible to reconcile two goals which appear contradictory at first sight, i.e. suitability for jobs of the kind which exist at present, and future adaptability in a situation in which companies and jobs will both be undergoing rapid change. The tendency in most countries is to abandon over-specialized training courses by grouping different types of courses together.

In addition, forecasting is difficult if not impossible, even in the short term. Examples abound of a rapid turnaround in the short-term situation of certain occupational sectors. Even if it were possible to predict the way in which job opportunities will develop, it would still be necessary to know whether these jobs will be open to young people, to the unemployed or to persons already present on the labour market. On the labour market overall, young people are very much in the minority when it comes to recruitment.

Today, we know that the relationship between training and employment cannot be seen as a supplier-client relationship. It is far more a question of a mutual interaction, with the organization of work depending on the persons who might be recruited. For example, Taylorism responded to the need to harness masses of often illiterate peasants to industrial work. The end of Taylorism was attributable, among other factors, to its incompatibility with the psychology of better-trained workers.

Given all these considerations, no-one believes any longer in models designed to determine accurately how many persons needed to be trained in each occupational sector in five years' time. Nevertheless, regulation by market forces alone is not feasible either, given the fact that lead times are so long for education and training.

4.2 The only option open to training is to lay emphasis on the adaptability of the workforce.

This is a relatively new requirement for skilled workers of all kinds. Two complementary answers can be given.

First, transverse skills of the kind referred to in section 3.3 must be developed. The first response therefore consists in strengthening general education, which is today becoming the principal form of vocational training. In particular, it is evident by now that effective literacy training, i.e. going beyond the acquisition of basics, is vital. As the next step, basic general education may include a technological component enabling pupils to be given a technical culture and so make the whole population familiar with technology.

The second response resides in continuing training, lasting throughout a career. One of the goals of initial training is to encourage this possibility by "teaching the individual to learn". What is needed is to think out in a comprehensive way what life-long training could consist of in a continuum between initial training and continuing training.

We then arrive at an arrangement consisting of improved general education followed by training for a first job, and then continuing training in accordance with the needs both of the company and of the individual.

However, this arrangement comes up against three difficulties. Firstly, unemployment is making it harder to find a first job. Then again, the usual academic training is not necessarily designed to enable students to acquire the transverse capabilities required. It ought, therefore, to be rethought with that aim in view, and more in its methods than in its programmes. Finally, there is a risk that insistence on a higher standard of general education will create an obstacle to training for all - and particularly for those from modest social backgrounds.

Thus the solution of longer general education prior to any course of vocational training, which might even be delayed until higher education, is at first sight attractive but is nevertheless a delicate issue. It could result in the vocational dimension of general education being forgotten or disregarded, it raises the problem of the integration of general and occupational skills, and it places individuals who find it hard to acquire academic skills at a disadvantage. There are even cases in which vocational training may actually promote literacy training, especially for adults.

Instead of a short course of preliminary training for a job, preference should be given, after basic training, to a period of a few years in which vocational training and general education are associated, with the one motivating and supporting the other. This recommendation fits in with the ideas advanced by the science of education on the building up of knowledge through action. It is certainly easier to implement in a system consisting mainly of educational establishments rather than in a system which falls under the responsibility of companies, and more readily in an education system in which the vocational routes are clearly demarcated, so that it is possible to link general eduction successfully with vocational training. The most widespread tendency today is to prepare for a family of trades rather than one specific trade so as to promote adaptability. However, training may also be provided for a specialized occupation of the kind encountered in companies close to the training establishment or in the firm where the trained person is employed, provided that, starting from this vocational nucleus, the horizon can be broadened to neighbouring careers and transverse and transferable skills. This teaching technique may facilitate the success of young people who are experiencing difficulty with their general education.

However, many questions remain about this intermediate period and its relationship with general basic training: what paths are there for the different levels of qualification; must they diverge at any early stage; and are bridges needed between them (Sec. 4.3)? How can the intake of students be adjusted (Sec. 4.4)? How can the contents, curricula and programmes be determined, the training validated and the qualifications recognized (Sec. 4.5)? What resources should be devoted to vocational training and who is to provide the money (Sec. 4.6)?

4.3 The paths

There are two pitfalls in education:

- premature segregation, for example between the streams which lead on to university education and those leading to manual or office jobs. This increases the disparities observed at the outset and proves disadvantageous to slow learners, particularly those from modest social backgrounds. It amounts to an instrument for the reproduction of the existing social hierarchy, which may perhaps avoid conflicts and frustration but does not make the best possible use of talent;

- identical education for all; since this denies the existence of differences, it is unable to make the best use of different motivations and in the end favours the pupils who most resemble the teachers. That may cause the same pupils to fail as in a segregative system, and perhaps cause them to fail more badly. It may also jeopardize the quality of training.

Each country must steer a course between these two pitfalls, having regard to its own history and the ability of the teachers to get heterogeneous groups to work successfully. There are grounds for thinking that historical trends and social demand will lead to the separation of pupils being delayed, for example until the end of compulsory schooling by practising differentiated teaching in the classroom, and then lead to the avoidance of dead-end streams, through the establishment of bridges or modular systems.

Vocational training is concerned by this problem to a particular degree as it is bound up with the hierarchical organization of companies. There are various levels of qualification and employment (unskilled personnel, skilled workers, technicians, higher technicians, engineers) and the simplest solution is for the length of general education to be the essential distinguishing feature in their education. Vocational training may even be shorter the higher people rise in the hierarchy. What is more, continuing training will tend to be reserved for persons who already have a better level of employment. This "fractional distillation" (Figure 1) inevitably results in the devaluing of vocational training in relation to general education since, at each branch, it leads to positions that are lower than those which one could hope for if one continued with general education.

One solution is to set up real vocational streams which may be entered, and above all left, at different levels to return to the context of continuing training: "Let every soldier have a marshal's baton in his knapsack", as Napoleon Bonaparte put it (Figure 2).

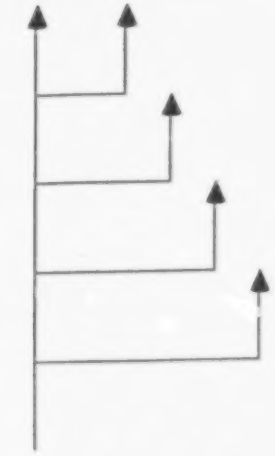

Figure 1

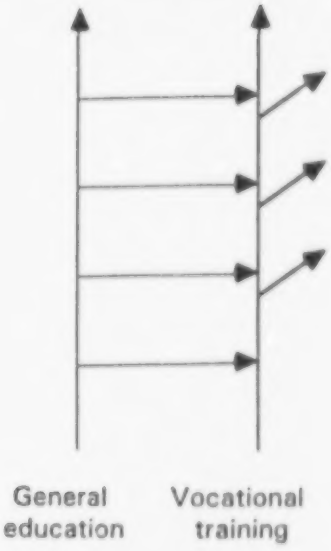

Figure 2

However, the organization of teaching for streams of this kind is complex and requires thought to be given to what is needed in order to pass from one level of qualification to the next highest level. In some instances, especially in the craft trades and professions, the call is essentially for specialization and more thorough knowledge. In modern industry, the need tends rather to be for a broadening of the occupational training so as to give access to posts of responsibility and supervisory, planning and decision-making functions which require greater self-reliance in space and time. Some types of knowledge and specialized skills then become superfluous and may sometimes even be a barrier to learning. It is necessary to discover how to use them to extend one's skills. The situation becomes still more complicated in cases where training takes in at one and the same time specialists from a lower level, whose skills need to be broadened, and persons with general training who now need specialized knowledge.

4.4 The intake

After defining the paths to be followed, the problem of the distribution of the intake between them arises. The pattern of vocational streams (Figure 2) may have the drawback of encouraging people to go on studying indefinitely, in a way that does not match the real needs of the economy, with only the students who fail dropping out. This happens when youth unemployment is high and companies do not apply a suitable pay and promotion policy. If giving up study leads to a lower salary, more strenuous and less interesting work, a less promising future and a higher risk of unemployment than if one continues, is there a genuine choice? The only thing is to introduce other criteria such as making the cost of studies high, making the course very demanding or the selection tough.

However, the other pattern (Figure 1) presents the same drawback by replacing "giving up study" by "abandoning general education to transfer to vocational training." In actual fact, social contradictions lie at the heart of the difficulties of vocational training and many complaints about the devaluation of vocational training are hypocritical, the situation which they criticise being merely the result of young people and their families having better information. Some people would, of course, prefer an early segregation based on

supposedly educational, but in fact essentially social, criteria making it possible to restrict this information when the separation occurs.

Market forces can have a partial effect on this problem of intake and companies also hold a part of the solution in their hands, with a varying degree of intervention by the public authorities from one country to another. It is also the responsibility of the public authorities and training agencies to make sure that young people and their families are properly informed about the prospects afforded by the different training courses and streams.

However, the longer the training is, the more difficult it becomes to provide information since decisions on the courses to follow have no immediate effect in terms of employment opportunities. It is therefore reasonable to suppose that market forces operate more effectively for company-based training systems, such as informal training or apprenticeships, since companies regulate access to training in accordance with their policy for the renewal and development of the workforce. In addition, once young people have joined a company they are almost as favourably placed to stay there as their more senior counterparts. These training systems are therefore relatively more favourable to the employment of young people - a fact which seems to be confirmed by the German dual system.

However, companies must still be capable of predicting the future. The risk is that the trainee population may fluctuate with the economic cycle so that training goes by the board in a time of crisis and is hard to reintroduce thereafter. Thus, when a system in which apprenticeship holds a prominent position exists at the same time as persistent economic difficulties, this leads to the collapse of vocational training.

A school-based education system, on the other hand, is more sensitive to the demand of young people, which is known to it, than to the needs of the economy that are largely uncertain. It therefore runs a greater risk of being out of phase with the employment market, training too many people to a level which is too high during periods of unemployment, and not necessarily in the right sectors in a period of balance. However, it is less bound up with the economic cycle and may even play a temporary buffer role by extending the length of education in times when employment is scarce. This has happened in recent years but cannot continue indefinitely.

4.5 Content

Deciding on the content of training courses leading to the different trades or groups of trades is always difficult. Each company has its own ideas and the acquisition of a "corporate culture" has become important, but companies vary greatly. They are at widely differing stages of technological and structural modernization and training may indeed have the value of bringing them skills which they do not already possess. In an uncertain world, it is important to encourage worker mobility. Professional organizations are supposed to make a survey of the needs of the companies which they represent, but they are often remote from them or only represent the viewpoint of the largest companies, which are not always those that recruit young people. In addition, not only the employers but also the employees must be allowed to express themselves - and that is often still more difficult.

In a number of countries of Europe and North America, techniques for deciding on content (curricula, syllabuses, reference systems) have been developed. These techniques are based on an analysis of each trade or work station in terms of the tasks to be performed and the skills (knowledge, know-how, attitudes) which training should impart. Very real difficulties arise because companies are so varied, with the result that the trade or work

station is in reality no more than an abstraction. In addition, the analysis is easiest for the Taylorian form of organization which is now disappearing, and in a different context it runs the risk of leading to over-simplification, in particular by placing most emphasis on know-how. What is more, it is based on the existing situation and can hardly predict the future, except by extrapolating past trends and comparing the situations which exist in all the different companies. It runs the risk of sacrificing adaptability, or of seeking to impart it by adding unnecessary content "just in case". Finally, it is difficult in this way to design streams with several exit levels where the objectives at each level are not just directly vocational, but also involve continuing with a broader education.

To overcome these difficulties, it might be worth combining entry based on vocational objectives with entry based on the subjects taught. Some techniques are shared by a number of different areas of work such as mechanical engineering, electricity, management and informatics. Quite recently, they have given rise to academic disciplines known as the "artificial" sciences. Their aim is not to understand a given piece of data like the more traditional sciences but to find answers to problems by linking together hardware, intellectual and software components. Methodological aspects play a fundamental role. Their permanence over a period of time revolves around methods and the links between components, over and above technical developments, which leads them on to "systemic" approaches through functional analysis and to "black boxes". In this way, learning them can promote adaptability and provide a backbone for the vocational training streams. A series of training courses constructed round these disciplines to serve as the basis for later vocational specialization may be termed **technological education**.

It is clear that deciding on content is an activity which cannot be improvised and takes time - a fact which is incompatible with the necessary flexibility of the training system. To carry out this task effectively, the employers' and employees' representatives must be assisted by instructors and curriculum specialists. This should be an area for international co-operation.

Decisions about content are linked with the validation of training and the recognition of qualifications. This confirms the need for discussion and agreement between employers, employees' unions and instructors. The agreement must cover a significant geographic area, and an informal training system experiences difficulty on this point. The local level is insufficient, as indeed is the national level in some cases. That raises the issue of the mutual recognition of diplomas and qualifications by countries between which significant migratory movements exist.

4.6. Resources and financing

One obstacle to the development of vocational training is the scale of the resources needed. It is more expensive than general education, but the increase in the cost of training runs up against demographic constraints, the fall in the national product in many countries and other social expenditure such as that required in the health sector[1] Hence the providers of funds face two temptations:

- placing emphasis on general education alone; this is reasonable to some extent but is liable to exclude part of the population from any usable training;

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[1] S. Peano. The financing of education systems, Working paper for the International Commission for the Twenty-first Century (March 1993).

S. Heyneman. The financing of education. Council of Europe seminar on "Education: structures, policies and strategies". Strasbourg (December 1993).

- restricting vocational training to what is known to be absolutely necessary, although uncertainty over the future does not make it possible to know what is necessary, so that there tends to be a risk of having an under-sized training system, resulting in the long run in a lack of growth and a loss of competitiveness.

Two contradictory approaches are encountered here. One regards vocational training as an investment for the future, taking as a basis views such as are set out in section 3, while the other doubts whether the investment is viable and cites examples of cases in which it was not. These contradictory approaches both have an element of truth. The investment in question may be extremely profitable but is uncertain in strictly economic terms, like any long-term investment in the world in which we live.

As Abraham Lincoln said, "Education is expensive, so give ignorance a try". In other words, the lack or inadequacy of vocational training in any country places it in a situation of dependence and alienates its future. We can then go on to make a closer analysis of the investments that are required and the ways of funding them.

The two main cost elements are personnel and equipment. In many parts of the world, vocational training teachers are few and far between - much more so than teachers in the general educational system, and their own training is both difficult and costly. The equipment, too, is expensive and technical progress soon makes it obsolete.

Training under the responsibility of companies offers a major advantage here since it enables instructors to be chosen from their own personnel and the companies' own equipment can be used. However, this advantage is perhaps less decisive than might appear at first sight. Teaching is a profession which cannot be improvised. A good workman or a good engineer will not necessarily make a good teacher. Companies which use modern production equipment are not keen on making it available to their apprentices. They prefer to set up their own school on the company premises with its own equipment. However, when training is given outside, the outside establishment is able to organize exchanges of personnel and equipment with companies. Ideally, this will involve exchanges in both directions, with company staff contributing to the teaching given in the school, and the instructors from the school providing continuing training for company personnel. The school will occasionally make use of the company's equipment but may also itself make available equipment which companies in the vicinity do not possess.

Regardless of the system which is chosen, the beneficiaries of vocational training, i.e. companies, must contribute to its financing. Applying this principle is nevertheless a delicate matter at a time when worker mobility is increasing and is proving to be a factor for progress. In addition, it should be remembered that training is an investment which brings benefits to the entire national community, if not to all humankind. Applying this principle is a still more delicate matter when general education and vocational training are combined, as recommended by us, particularly under the responsibility of a state education system. It would appear easier in the case of continuing training than in that of initial training, although there is a danger of inequality between workers from different companies.

4.7 Partnership

Two things emerge from this analysis of the problems confronting vocational training.

No one system enjoys clear superiority over the others, even though it is clear that an informal system cannot promote either the mobility of the persons who have been trained or the integration of the two kinds of training, general and vocational. The disputes over

organizational aspects are therefore secondary when measured against the fundamental issues. In any event, whenever we take a close look at the main system of training in any country, we find that it is intimately bound up with history and social behaviour and is therefore hard to export. In addition, the likelihood that a far-reaching change of approach will prove successful is small. What is more, the choice does not always exist. For example, it is necessary to make provision for vocational training even where there are no successful companies, if only to attract business to a region. In such cases, training can only take place in the school system.

The key factor is to ensure a partnership between training establishments, employers, employees' trade unions and the public authorities. For this partnership to be effective it must be arranged at various levels: nationally or internationally for the decisions about content and recognition of diplomas; nationally or at a lower level for action on student intake and for policy matters relating to the introduction of training. For that, we need a reliable information system. Lastly, implementation must be arranged locally, for which purpose it is imperative for the establishments to have sufficient freedom, limited only by the need for official recognition of diplomas. It must be an ongoing partnership, which alone can replace the planning that has become impossible in our uncertain world.

In the case of a system which relies essentially on educational establishments, one element of the partnership is the inclusion of work experience in the training course. Over and above the evident benefit to pupils who then find themselves in a real working environment, the establishment can also become aware of current trends and help to assimilate them, provided that some kind of system linking the different educational establishments exists. Other elements in the partnership include exchanges of teaching staff and equipment or even the subcontracting of work by companies to schools.

5. Conclusion

The close interaction between employment and vocational training makes it essential for the two to be considered simultaneously and it might even seem pointless to provide vocational training without the certainty that it will lead on to employment.[1]

Under the influence of internationalization, automation and an ideology of "rationalization", employment today is in a state of deep crisis in most countries. Work has ceased to be a curse and is becoming a privilege instead. We may have emerged from a situation of conflict between the possessors of wealth and the workers, but it has been replaced by a gulf, which is no less dangerous and is certainly more international, between the persons who are able to participate in the society portrayed by the media and those who are excluded from it. They are in a majority in the world and their numbers are increasing. Employment is a key factor in this gulf because it not only brings an income to sustain life but also provides an occupation[2] and a position in society.

The possible responses to the problem of employment center on three notions: job-sharing, the resumption of growth, and the development of new occupations or a return to some which have disappeared. Each implicitly calls for strengthening vocational training. Work cannot be shared between some people with a high level of performance

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[1] This point of view is put strongly by the World Bank in its general policy document on technical education and vocational training (1991). See also J. Middleton, A. Ziderman, A. Van Adams. Skills for productivity. A World Bank book. Oxford University Press (1993).

[2] Is not **desocupado** one of the words used in Spanish for an unemployed person?

and others who have not achieved that level. In the present state of the economy, growth requires well-trained workers. New occupations will only emerge if the persons who pursue them provide a real service. The aim can thus no longer merely be to train people for types of employment which already exist. The aim of training must also be to enable jobs to be created.

The first possibility envisaged is defensive and reserved for the rich countries. The other two overlap if they are seen as the reconciliation of the vast needs of mankind and the means of satisfying those needs. Growth must be employment-intensive and must respond to real needs if it is to be sustainable. The precious nature of the "human resource" must be taken seriously. We must promote an economy in the service of people by giving companies the objective not simply of supplying goods and services but also of providing jobs. This involves a major change of perspective and will not come about spontaneously. Public authorities have a part to play but the breadth of activities ranging from the small family firm to the biggest multinational requires a partnership at various levels: local, national, regional and global.

The local level is essential because it is hard to imagine that solutions could come essentially from the outside. Training is one of the main driving forces behind economic takeoff and must be a training which gives people the will to become entrepreneurs and the skills to do so. In addition, at every level, training has its place in partnership with companies of all sizes. It forms part of the resources offered to companies and of the services which they themselves can provide.

However, if jobs are not available, or not in sufficient numbers, and until new forms of employment can be created, the problem arises of the occupation and social position of each individual, i.e. ultimately, the possibility of living together in dignity and peace. Training also has a role to play here, i.e. both general education and vocational training integrated into a system of comprehensive training for individuals, citizens and workers. After all, the cohesion of society is made up at one and the same time of unity and diversity - the unity of a shared culture which enables people to exist and act together and the diversity which enables them to recognize each other and give to each other. Nobody must be placed constantly in a dominated situation. Every individual must possess an area in which he or she is able to take initiatives in order to encourage consideration and action by others. General education places the main emphasis on the unity and transmission of a culture. It also provides tools for further progress, but it is vocational training which ensures differentiation and completes the personal identity, provided that it does not confine itself to securing the performance of stereotyped gestures but permits autonomy in space and time. Its objective within global training therefore goes beyond mere preparation for employment and should be suitably broadened in future.

After proclaiming the right of everyone to literacy training, which confers proficiency with the written word, the vital instrument of thought, should not the twenty-first century also ensure the right to vocational training, a tool for action, for everyone throughout their lives, not only to bring about progress in solving the employment problem but also as a dimension of individual identity and of social life?